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Prevalence of suicidal ideation, depression, and family dysfunction in first-year students of the Bachelor's Degree in Medical Surgery at the Universidad Regional del Sureste

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Suicidal ideation is a process that is intertwined with suicidal behavior, beginning with the development of thoughts about the value of life. These thoughts can transform and trigger a chain of events ranging from planning to execute a suicide attempt. The study was conducted using a descriptive observational approach, which involved collecting numerical data and statistical analysis to determine the characteristic patterns of the investigated phenomenon. Several specific instruments were used to collect the data: the Beck Suicidal Ideation Scale, the Beck Depression Inventory, the Questionnaire for the Identification of Drug Dependence, and the Family Apgar Scale. The prevalence of suicidal ideation was 15.3%; in addition, 15.9% presented mild family dysfunction, moderate in 10.6% and severe with 21.8%; depression was recorded in mild degree with 26.5%, followed by moderate in 10.6% of the cases and severe with 7.6%. Suicidal ideation among medical students is an issue of great concern that should be addressed holistically. It is critical to create a supportive environment that promotes both the mental health and well-being of medical students.

KEYWORDS

suicidal ideation, depression, mental health, higher education, Mexico

1 Introduction

Suicidal ideation is a complex phenomenon that encompasses a series of thoughts ranging from the perception that life is worthless to the detailed elaboration of a plan on how to end it (Jobes et al., 2024). This process is considered a continuum, as it can range from mere ideation and planning to attempted and completed suicide (Sveticic and De Leo, 2012). In higher education, medical students are especially vulnerable due to the high academic and emotional demands inherent in their training (Bergmann et al., 2019). In the first few years of medical-surgical training are incredibly challenging, as the curriculum is intensive and the pressures for outstanding performance are constant. As a result, these students may experience symptoms of depression and anxiety, which in turn increase the risk of developing suicidal thoughts (Rosiek et al., 2016; Rotenstein et al., 2016).

Suicidal ideation and behavior represent a serious mental health problem among Mexican university students, with prevalences ranging from 13 to 30%, according to several studies

(Córdova-Osnaya and Rosales-Pérez, 2016; Córdova-Osnaya et al., 2007). Factors such as depression, hopelessness, anxiety, academic stress, and substance use have been identified as significant risks associated with suicidal ideation and attempts in this population. Females tend to report higher rates of suicidal ideation and behaviors than males, and there is a negative correlation between academic performance and the presence of suicidal thoughts (Santillán Torres Torija et al., 2024).

The transition to college life, marked by academic and social challenges, can become a breeding ground for suicidal ideation when individual and environmental factors converge. Thomas Joiner's interpersonal theory of suicide and the stress-diathesis model offers a dual lens that explains how internal vulnerabilities and external pressures intertwine in students' minds. Joiner's theory illuminates three psychological wounds that corrode the will to live (Chu et al., 2017). First, the perception of burden emerges when the student, overwhelmed by academic failures or economic dependence, internalizes the belief that their existence harms family or peers. This feeling is exacerbated in competitive environments, where self-demand distorts reality: a failed exam or a lost scholarship can be interpreted as irrefutable proof of worthlessness (Ribeiro and Joiner, 2009; Hawkins et al., 2014).

Second, frustrated belonging sprouts in university residences and empty classrooms. Isolation, common in those who migrate from the city or struggle to integrate, generates an existential void: "No one would miss me if I disappeared." Third, although acquired capacity (prior exposure to pain) is often linked to suicidal attempts rather than ideation, its shadow persists: students with a history of self-harm may normalize suffering, reducing mental barriers to self-destructive thoughts (Ribeiro and Joiner, 2009; Hawkins et al., 2014).

In parallel, the stress-diathesis model explains how specific vulnerabilities, latent as seeds, germinate under the storm of academic stress. The diathesis includes invisible but determining features: altered serotonin systems that cloud decision-making, a history of abuse that sows learned hopelessness, or rigid cognitive patterns that transform "I did not pass the course" into "my life is a failure." These vulnerabilities collide with specific environmental stressors: sleepless nights preparing for final exams, the pressure to stand out in a hypercompetitive peer group, or the fear of letting down families who invest limited resources in their education (Colodro-Conde et al., 2018; Arnau-Soler et al., 2019).

The interplay between the two models is dynamic and lethal. A student with psychological diathesis will interpret an academic setback as confirmation of their worthlessness, while loneliness in a distant residence will feed their social disconnection. Research in Latin American universities shows correlations between suicidal ideation, high cortisol levels, and low family cohesion. In addition, 34% of students who reported suicidal thoughts attributed their distress to "not meeting academic expectations," a stressor that activates pre-existing diathesis such as perfectionism or fear of failure (Colodro-Conde et al., 2018).

Against this backdrop, interventions should operate on two fronts. First, environmental stressors can be mitigated through peer mentoring programs, flexibility of academic loads in critical periods, and emotional management workshops integrated into the curriculum. Second, identify and strengthen protective factors, from early intervention in students with a history of trauma to the creation of "safe classrooms" that foster authentic connections among peers.

More than a space for professional training, the university must be rebuilt as a therapeutic community where vulnerability is not a stigma but a bridge to collective resilience. However, by addressing these issues early on, there is the potential to develop more empathetic professionals who can better manage stress, which positively impacts both themselves and their future patients (Reynolds et al., 2022).

Depression is presented as one of the most consistent predictors of suicidal ideation. Several studies have shown that symptoms such as hopelessness and self-critical thoughts are deeply related to the occurrence of suicidal ideation (Riera-Serra et al., 2024; Wolfe et al., 2019). Cognitive rumination, a repetitive thought pattern that focuses on unsolvable problems, mediates this process (Fawcett et al., 2015). This rumination not only perpetuates the symptoms of depression but also limits the ability of individuals to seek alternatives to their existential issues, thus creating a cycle of self-destruction (Michl et al., 2013; Stelmach-Lask et al., 2024).

As for family dysfunction, this becomes an environment where parental conflicts and painful separations have destroyed the sense of security and unconditional love. In this environment, young people often feel alone and helpless, lacking an emotional support network to help them face life's challenges (Resendes et al., 2024). Lack of affectionate communication and emotional distancing on the part of caregivers can make adolescents feel invisible as if their feelings and needs are unimportant. This sense of isolation can intensify the belief that there is no way out of their problems, leading them to consider suicide as an escape from emotional pain (Choe et al., 2023).

Substance use has a significant impact on judgment and decreases the fear of death. Both alcohol and drugs can transform suicidal thoughts into impulsive actions, preventing reason from intervening (Rizk et al., 2021). In states of inebriation or under the effect of substances, the barriers that generally limit self-destructive behaviors fade, exposing the individual to a greater risk of attempting suicide. In addition, chronic drug use can lead to neurochemical changes that aggravate symptoms of depression and anxiety, creating a vicious cycle that is difficult to break (Rizk et al., 2021; Galaif et al., 2007). Adolescents who suffer from substance abuse not only face an increased risk of suicidal ideation but may also be impaired in their ability to seek help or find alternative solutions to their problems (Zhang and Wu, 2014). This study aimed to determine the prevalence of suicidal ideation in first-year medical surgery students at the Universidad Regional del Sureste (URSE).

2 Methods

2.1 Design

This study is framed within a cross-sectional descriptive observational design. This methodological approach allows for examining a phenomenon at a specific time and identifying its prevalence, associated characteristics, and behavioral patterns without intervening in the variables analyzed.

2.2 Participants

The study focused on the total number of first-year medical students enrolled in the Faculty of Medicine and Surgery of the

Southeastern Regional University (URSE) between August 2024 and February 2025.

2.3 Instruments and procedure

Once the research proposal was presented and approved by the research committee of the Faculty of Medicine and Surgery of the Universidad Regional del Sureste (URSE), we proceeded to request the corresponding authorizations from each of the participants for the approval and execution of the research. This step was crucial to ensure compliance with the ethical and legal standards that govern research with human subjects. Data was collected over 3 months using the proposed and previously validated instruments. The data collection instruments were as follows.

1. The Beck Suicidal Ideation Scale is a semi-structured tool composed of 19 items designed to determine, evaluate, and measure the presence and severity of suicidal ideation as well as suicide attempts in different groups of people. This scale provides a detailed assessment of suicidal thoughts, allowing mental health professionals to identify and quantify the level of suicidal risk in the individuals assessed (Dyrbye et al., 2014). This instrument presented a Cronbach's alpha coefficient of 0.91.
2. The Beck Depression Inventory (BDI) is a widely used tool for assessing and treating depressive symptomatology. This self-administered questionnaire consists of 21 items, each designed to measure different aspects of depression, such as sadness, pessimism, loss of pleasure, and feelings of guilt or failure. Each item offers a series of graded responses, ranging from less to more severe, allowing participants to select the statement that best describes how they have felt in the past 2 weeks (Yaghmour et al., 2017). This instrument presented a Cronbach's alpha coefficient of 0.89.
3. The Drug Dependence Identification Questionnaire is an instrument composed of 10 questions designed to explore the relationship between adolescent behaviors related to the use, abuse, or dependence on addictive substances in general terms. This questionnaire makes it possible to determine the frequency of use of various substances, including alcohol, tobacco, cocaine, marijuana, inhalants, and solvents. By assessing the use of these substances, the questionnaire helps to identify patterns of use that may indicate an increasing risk of dependence or abuse (Fantin, 2006). This instrument presented a Cronbach's alpha coefficient of 0.81.
4. The Family Apgar is an instrument that assesses how family members globally perceive the level of functioning of their family unit. It is used to determine how an individual describes the functioning of their family environment at a specific moment in time, making it possible to identify families with problems or dysfunctions (Karimi et al., 2022). This instrument presented a Cronbach's alpha coefficient of 0.82.

During the study, the information was organized in detail with Excel and then entered the database using SPSS version 26.0. In the descriptive analysis of qualitative variables, percentages, frequencies, and modes were obtained. For quantitative variables, position

measures, including central tendency and dispersion, were calculated for their description.

2.4 Ethical aspects

The questionnaire was distributed through a Google Forms form, allowing medical students to complete it from their devices. Consent was obtained from the participants to ensure the protection of their data. In the classrooms, they were informed about the study's aim and provided with the link to the questionnaire. In addition, it was ensured that all responses were confidential and anonymous.

3 Results

The study population initially consisted of 171 students, of whom 170 agreed to participate voluntarily in the research, thus achieving a response rate of 99.4%. This high participation level contributes to the results' representativeness and validity.

The study was developed in strict compliance with current ethical regulations, particularly the Mexican Official Standard NOM-012-SSA3-2012, establishing the requirements for health research involving human subjects. In addition, the protocol was submitted and approved by the Research Committee of the Faculty of Medicine and Surgery under approval code 699-18, thus ensuring compliance with the ethical and methodological standards necessary to protect the participants.

Regarding the sociodemographic characteristics of the subjects, 62.4% were female, while the remaining 37.6% were male, reflecting a female predominance in the sample. The mean age of the participants was 18.7 years ($SD \pm 1.3$ years), indicating that the sample was composed mainly of young people in a homogeneous age range. This age homogeneity facilitates data analysis and interpretation by reducing variability attributable to generational differences or different stages of development.

Regarding the presence of depressive symptoms among the students evaluated, it was observed that 26.5% of the sample presented symptoms compatible with mild depression. In comparison, 10.6% manifested a moderate level of depression, and the remaining 7.6% showed symptoms of severe depression (see Table 1). These findings indicate that more than one-third of the participants experience some degree of depressive symptomatology, which represents a considerable proportion of this university population.

The distribution of depression levels reflects the importance of early identification of these symptoms, given that depression, even in its mild forms, can negatively affect students' academic performance, interpersonal relationships, and quality of life. In addition, the presence of moderate and severe depression poses an elevated risk of emotional and behavioral complications, including suicidal ideation, underscoring the need to implement screening, prevention, and psychological support strategies within the university setting.

Regarding family functionality, 15.9% of the students reported mild family dysfunction, 10.6% moderate, and 21.8% severe (see Table 1). Family functionality, understood as the theoretical framework that analyzes the dynamics and relationships within the family nucleus, is relevant to understanding how these interactions can influence students' psychological well-being.

TABLE 1 Data obtained from Beck Depression Inventory, Family Apgar and drug use in the study subjects.

Level of depression	Percentage (%)	Family functionalism	Percentage (%)	Drug abuse	Percentage of consumption per month (%)
Normal	55.3	Regular	51.8	No consumption	73.0
Slight depression	26.5	Slight dysfunction	15.9	Alcohol	17.6
Moderate depression	10.6	Moderate dysfunction	10.6	Tobacco	6.5
Severe depression	7.6	Severe dysfunction	21.8	Cannabis	2.9
Total	100	Total	100	Total	100

Regarding risk behaviors, it was identified that 22.17% of the students reported regular consumption of alcohol, tobacco, drugs, or other addictive substances (see Table 1). This finding is particularly relevant, as it indicates that approximately one in five participants is involved in habits that can compromise their physical and mental health.

The prevalence of suicidal ideation among the students evaluated was 15.3% (see Table 2), which is a significant and worrying proportion within the university context studied. This data indicates that approximately one in seven students have experienced thoughts related to suicide, reflecting an elevated level of emotional vulnerability in this young population.

The presence of suicidal ideation in such a high percentage highlights the urgency of addressing mental health in the academic setting, as these thoughts may be an early indicator of risk for self-injurious behaviors or suicide attempts. In addition, the university is a space where multiple stressors converge, such as academic pressure, social adaptation, and uncertainty about the future, which may contribute to the development of this problem.

Correlation analysis showed a moderate positive association ($r = 0.508$) between suicidal ideation and levels of depression in students, indicating that as depressive symptoms increase, so does the probability of suicidal thoughts. This finding is significant because although not all students with depression develop suicidal ideation, the observed relationship highlights the importance of early detection and timely intervention in cases of depression to prevent possible suicidal behavior.

A Student's *t*-test for independent samples was performed to compare the levels of depression and family functioning (measured by the family APGAR) between students who reported suicidal ideation ($n = 26$) and those who did not ($n = 144$).

Results indicated that students with suicidal ideation had significantly higher mean depression (18.3 ± 5.2) compared to students without suicidal ideation (12.7 ± 4.8), $t(168) = 6.45$, $p < 0.001$. This evidences that depression is significantly higher in those experiencing suicidal thoughts.

Regarding family functionality, students with suicidal ideation showed a significantly lower mean (5.8 ± 2.1) than students without suicidal ideation (7.4 ± 1.9), $t(168) = -4.12$, $p < 0.001$ (Table 3). This result suggests that a perception of lower family support and cohesion is associated with the presence of suicidal ideation.

4 Discussion

The presence of depressive symptoms in more than one-third of the students evaluated (44.7% combining mild, moderate, and severe

TABLE 2 Distribution of cases according to the Beck Suicidal Ideation Scale.

Suicidal ideation	Frequency	Percentage (%)
Yes	26	15.3
No	144	84.7
Total	170	100

TABLE 3 Results of Student's *t*-test for depression and family functioning according to the presence of suicidal ideation.

Variable	With suicidal ideation ($n = 26$)	Without suicidal ideation ($n = 144$)	<i>t</i>	<i>df</i>	<i>p</i>
Depression (mean \pm SD)	18.3 ± 5.2	12.7 ± 4.8	6.5	168	<0.001
Family functionality (mean \pm SD)	5.8 ± 2.1	7.4 ± 1.9	-4.1	168	<0.001

depression) reveals a significant problem within the university context, especially in medical programs that are recognized for their high academic and emotional demands. The high study load, the pressure to demonstrate clinical competence, and the fear of failure generate an environment conducive to the development of chronic stress and anxiety, factors closely linked to the onset and aggravation of depression. This emotional state affects not only academic performance but also interpersonal relationships and the quality of life of students, which can trigger more serious consequences such as suicidal ideation (Bergmann et al., 2019; Voltmer et al., 2021).

Emotionally challenging experiences faced by medical students, such as exposure to illness and death, can intensify psychological distress and contribute to persistent depressive symptoms. Lack of practical support and stress management strategies within the academic environment can exacerbate this situation, increasing students' vulnerability (Stoffel and Cain, 2018).

A critical aspect that emerges from the discussion is the persistent stigma associated with mental health in the medical setting, where seeking help may be perceived as a sign of weakness or a career threat. This perception limits students' willingness to access psychological services, perpetuating a cycle of unaddressed suffering. The combination of intense academic demands and social isolation, resulting from long study days that reduce the time to maintain support networks, contributes to an emotional deterioration that

increases the risk of suicidal behavior (Fox et al., 2018; Berliant et al., 2022; Rich et al., 2024).

The demanding nature of the medical program contributes to considerable social isolation. Long study schedules and intense academic demands leave little room for cultivating and maintaining meaningful personal relationships. This isolation can have devastating consequences for mental health, as social support is a crucial factor in emotional well-being (Brandt et al., 2022). Lack of social and emotional support not only affects students' quality of life but can also increase the risk of suicidal ideation. Constant pressure, combined with loneliness and lack of adequate resources to manage stress, creates an environment conducive to the development of serious mental health problems (Motillon-Toudic et al., 2022). Medical training represents a significant challenge to the holistic well-being of students. With an alarming trend toward burnout, mental illness, and suicide, it is critical to address these issues seriously. Recent studies have identified risk factors associated with suicidal behaviors among medical students (Madadin et al., 2021; Seo et al., 2021), underscoring the urgent need to implement effective strategies to support their mental health.

Regarding family functionality, 15.9% of the students reported mild family dysfunction, 10.6% moderate, and 21.8% severe. Family functionality, understood as the theoretical framework that analyzes the dynamics and relationships within the family nucleus, is fundamental to understanding how these interactions influence students' psychological well-being. A family environment where adequate emotional support is not provided can significantly increase the risk of suicidal ideation, as the lack of emotional support generates feelings of isolation and hopelessness, which are exacerbated when there is poor communication among family members (Arik et al., 2024). This ineffective communication hinders the expression of emotions and conflict resolution, creating an environment in which members feel disconnected and lack the resources to cope with their emotional challenges.

Persistent conflicts in the family, such as verbal, physical or emotional abuse, have a profoundly negative impact on the mental health of individuals (Sun et al., 2024). These chronic situations foster feelings of hopelessness and helplessness, elevating the risk of suicidal ideation (Radell et al., 2021). Prolonged exposure to a dysfunctional family environment can lead to decreased self-esteem, anxiety and depression, comprehensively affecting the well-being of its members. It is essential to address these issues through early interventions and professional support in order to improve family dynamics and promote a healthier and safer environment for all family members.

The fact that approximately 22.17% of college students report habitual use of alcohol, tobacco, drugs, or other addictive substances represents a critical concern for the mental and physical health of this population. This risk behavior is not only associated with the development of dependence disorders, cognitive impairment, and emotional disturbances but also significantly increases the likelihood of suicidal ideation and self-injurious behaviors. Frequent substance use can exacerbate depressive and anxious symptoms, decrease coping capacity in the face of academic and social stress, and generate a vicious cycle that aggravates the emotional vulnerability of students (Mitincu-Caramfil et al., 2025). Universities must implement comprehensive prevention and support strategies, including early detection programs, specialized psychological counseling, and

awareness campaigns on the risks of substance use and its relationship with mental health.

5 Findings

In addition to analyzing the previously mentioned factors, an Eating Behavior Survey (EBS) was applied to the same study population, yielding the following findings. A high prevalence of problematic eating behaviors was identified. More than half of the participants, 53%, obtained scores on the EBS that indicate a high probability of suffering from some eating disorder. This data reveals the magnitude of the problem within this age group, which is in a life stage characterized by changes and challenges that may influence their eating habits. When the results were broken down by gender, it was observed that 46.2% of the women and 64.0% of the men presented positive results in the EBS. This finding is relevant because traditionally, eating disorders (ED) are more frequently associated with the female sex; however, in this population, men also show considerable risk.

Regarding specific diagnoses, a small percentage of the students, 2.7%, were found to meet the criteria for Anorexia Nervosa (AN). This condition is characterized by severe restriction in food intake, intense fear of gaining weight, and distorted perception of one's own body. 8.0% of the participants presented characteristics compatible with Bulimia Nervosa (BN), which is manifested by recurrent episodes of excessive eating followed by compensatory behaviors such as self-induced vomiting or the use of laxatives.

Most of the cases detected, 87.3%, corresponded to Eating Disorders Not Otherwise Specified. This indicates that many individuals present with significant symptoms that do not fully fit the strict criteria for anorexia or bulimia, reflecting the complexity and diversity of these illnesses. This high proportion highlights the importance of considering a broad spectrum of clinical manifestations when addressing EDs. Clinically, EDs affect not only the physical but also the psychological and social health of those who suffer from them. Anorexia nervosa involves self-imposed caloric restriction that can lead to progressive malnutrition. In contrast, bulimia nervosa is characterized by episodes of binge eating followed by compensatory behaviors to avoid weight gain. In contrast, binge eating disorder, although not explicitly identified in this sample, is recognized for its high overall prevalence and association with obesity, without body image distortion.

A relevant aspect that was evaluated was the relationship between the severity of eating disorders (ED) and suicidal ideation. The results revealed a very weak correlation, with a Pearson correlation coefficient $r = 0.075$, suggesting that, in this sample, there is no significant linear relationship between both phenomena. However, this does not reduce the clinical importance of simultaneously monitoring both conditions, as comorbidity can occur and comprehensively affect the mental health of individuals.

6 Limitations

As limitations to our study, we can mention the following. The information was collected through self-reports, a method widely used in social and psychological research that has certain inherent

limitations. This type of data collection can be subject to social desirability bias, where participants tend to respond in ways that are perceived favorably by others and to underreporting, especially in highly sensitive topics such as suicide and psychoactive substance use. In these cases, the associated social stigma may induce respondents to minimize or deny problematic behaviors or thoughts, compromising the accuracy and validity of the responses obtained.

The study's sample was restricted to first-year students from a single educational institution and academic program. This limitation considerably reduces the sample's representativeness, making it difficult to generalize the findings to students from other degree programs, higher educational levels, or university contexts, which may present different dynamics, pressures, and sociodemographic characteristics. The homogeneity of the sample may, therefore, bias the results and limit their applicability in broader scenarios.

It is essential to consider that contextual factors not controlled for during data collection, such as the psychological and social impact of the COVID-19 pandemic and cultural, familial, and socioeconomic differences, may have influenced the responses and the overall results of the study. These elements were not explored in depth, representing an additional limitation, as they could constitute moderating or mediating variables relevant to interpreting the findings.

7 Conclusion

In conclusion, the prevalence of suicidal ideation among students was 15.3%. Suicidal ideation in medical students is a public health problem recognized worldwide. The prevalence of suicidal behaviors in this population is higher than that observed in students of other university careers, which could be related to a higher incidence of psychiatric disorders in these young people. The medical program imposes particularly intense academic and emotional demands, where students must assimilate large volumes of information and face difficult situations, such as illness and death. Stress and anxiety stemming from the fear of failure, as well as the pressure to demonstrate clinical competence, contribute significantly to the development of depressive disorders. Family functionality plays a critical role in the mental health of students. Lack of emotional support, poor communication, and family conflict can lead to feelings of isolation and hopelessness, increasing the risk of suicidal ideation. As for the use of addictive substances—such as alcohol, tobacco, and marijuana—although not the most prevalent problem, their use as a coping mechanism to deal with stress can aggravate existing mental disorders. Our analysis revealed a moderate positive correlation between suicidal ideation and depression, indicating that the presence of depression significantly increases the risk of suicidal thoughts. The stigma associated with mental health problems makes it difficult for students to seek help for fear of being perceived as weak or incompetent. This combination of fear, social isolation, and academic pressure further exacerbates the situation. It is essential to consider pursuing specific emotional and psychological support programs for medical students that address both the underlying causes and consequences of suicidal ideation. These programs should promote a healthier academic

environment and encourage open and nonjudgmental communication about mental health.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by Comité de Investigación, Facultad de Medicina y Cirugía URSE. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

BR-S: Writing – original draft, Methodology, Validation, Conceptualization, Data curation, Supervision, Investigation, Writing – review & editing, Formal analysis. DM-P: Methodology, Conceptualization, Investigation, Writing – original draft. CM-G: Methodology, Conceptualization, Writing – original draft, Investigation. IG-M: Validation, Resources, Methodology, Supervision, Conceptualization, Writing – original draft, Investigation, Writing – review & editing.

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